DEVICE AND METHOD OF REDUCING ESD DAMGE IN THIN FILM READ HEADS WHICH ENABLES MEASUREMENT OF GAP RESISTANCES AND METHOD OF MAKING

ABSTRACT OF THE DISCLOSURE

A first read gap layer has a resistance R_{G1} between a first shield layer and one of the first and second lead layers of a read head and the second read gap layer has a resistance R_{G2} between a second shield layer and said one of the first and second lead layers of the read head. A connection is provided via a plurality of resistors between a first node and each of the first and second shield layers wherein the plurality of resistors includes at least first and second resistors R_{S1} and R_{S2} and the first node is connected to said one of the first and second lead layers. A second node is located between the first and second resistors R_{S1} and R_{S2}. An operational amplifier has first and second inputs connected to the first and second nodes respectively so as to be across the first resistor R_{S1} and has an output connected to the first node for maintaining the first and second nodes at a common voltage potential. In a first embodiment the first and second shield layers are shorted together. A test instrument is then employed for determining the combined parallel resistance of the resistors R_{S1} and R_{S2} by having a first side of the test instrument connected to the first node and the second side connected to each of the first and second shield layers. In the second embodiment a third resistor R_{S3} is connected between the second node and one of the shield layers, such as the second shield layer. The test instrument can determine the resistances of the first and second gap layers separately by being connected between the first node and the first shield layer for the resistance of the first gap layer or between the first node and the second shield layer for the resistance of the second gap layer.